

REMARKS

Claims remaining in the present patent application are numbered 1-49. The rejections and comments of the Examiner set forth in the Office Action dated October 3, 2003 have been carefully considered by the Applicants. Applicants respectfully request the Examiner to consider and allow the remaining claims.

35 U.S.C. §103 Rejection

The present Office Action rejected Claims 1-49 under 35 U.S.C. 103(a) as being unpatentable over Miller et al. ("On-the-Fly Texture Computation for Real-time Surface Shading", April 1998, IEEE Computer Graphics and applications, pp. 44-58) in view of DeRose et al. (U.S. Patent No. 6,037,949).

Independent Claim 1 and Independent Claim 23

Regarding Independent Claims 1 and 23, embodiments of the presently claimed invention disclose a method of rendering an image, as presently claimed. In particular, Independent Claims 1 and 23 of the present invention recite, in part:

[A] method of rendering an image, comprising
generating a parametric texture map of a
subject that contains at least one varying parameter
in a set of varying parameters for an equation that
defines variation in pixel color, without modeling

geometric configurations of said subject, wherein each varying parameter in said equation corresponds to a varying condition. (Emphasis Added)

The claimed embodiments of Claim 1 and Claim 23 pertain to methods of rendering images. The present invention as claimed generates a parametric texture map of a subject without modeling geometric configurations. In particular, a parametric texture map of a subject is generated in an equation that defines variation in pixel color, wherein the equation includes a set of varying parameters that correspond to varying conditions.

Implicit within the claimed embodiments of independent Claim 1 and independent Claim 23 is that the bump mapping is not employed. That is, bump mapping is generally well known in the art to utilize geometric modeling of a subject to generate the parametric texture map of the subject. This is in direct contrast to the present invention which generates a parametric texture map of a subject without modeling geometric configurations of the subject, as claimed in independent Claims 1 and 23.

Applicants respectfully note that the Miller et al. reference taken alone or in combination with the DeRose et al. reference do not comprise nor suggest the present invention as claimed in independent Claims 1 and 23 in which a parametric texture map is generated without modeling

geometric configurations. In particular, the Miller et al. reference teaches away from the invention as presently claimed in independent Claims 1 and 23. That is, the Miller et al. reference as cited in the present Office Action employs a technique of bump mapping which requires modeling geometric configurations to generate a parametric texture map of a subject. Specifically, the Miller et al. reference discloses the extension of texture mapping to bump mapping techniques.

For instance, the Miller et al. reference states that their method "texture maps each object with an image containing the shaded appearance of the object." (See Miller et al. at page 45, col. 1, lines 3-6). As such, the Miller et al. reference specifically generates a separate image that is a geometric model of the object from which a texture map is generated for the object.

More specifically, the cited paragraph for the Miller et al. reference in the present Office Action states that a mesh is created of an object from which the mesh is scan-converted in parameter space for shading, as follows:

A different approach from caching is to think of the surface as a tessellated mesh and scan-convert this mesh in parameter space to shade the texture pixels. (Miller et al. reference, page 50, col. 2, lines 7-10).

As such, the Miller et al. reference requires the modeling of a geometric configuration when introducing the tessellated mesh, which is contrary to the present invention of independent Claims 1 and 23.

Moreover, another cited paragraph for the Miller et al. reference in the present Office Action states that bump mapping is the technique employed for generating the parametric texture map, shading, as follows:

The snake slithers over a bump-mapped ground plane, its shadow achieved by rendering a polygon textured with the ambiently lit surface texture. (Miller et al. reference, page 50, col. 2, lines 7-10).

In addition, the Miller et al. reference also states that bump mapping is revisited and extended. (See Miller et al., page 45, col. 2, beginning of third full paragraph). As such, the Miller et al. reference employs a bump mapping technique to generate the parametric texture map of a subject. As stated previously, the technique of bump mapping requires an intermediate step of generating a geometric model of the object.

As a result, with the generation of a model from which a parametric texture map is generated, the Miller et al. reference teaches away from the present invention that renders an image by generating a parametric texture map of a

subject without modeling geometric configurations of the subject, as presently claimed in independent Claims 1 and 23.

In addition, the combination of the DeRose et al. reference with the Miller et al. reference adopts the technique in the Miller et al. reference for generating a geometric model of the subject. The DeRose et al. reference discloses the use of scalar fields in texture mapping subdivision surfaces in computer graphics and animation. As such, the combination of the DeRose et al. reference with the Miller et al. reference fails to overcome the shortcomings of the Miller et al. reference since a varying parameter of a varying condition is implemented on a geometric model of the subject when generating a parametric texture map of the subject, which is in direct contrast to generating a parametric texture map of a subject without modeling geometric configurations of the subject, as presently claimed in independent Claims 1 and 23.

Thus, Applicants respectfully submit that the Miller et al. reference taken alone or in combination with the DeRose et al. reference does not show nor suggest the method of the present invention as recited in independent Claims 1 and 23. Accordingly, Applicants respectfully submit that independent Claim 1 overcomes the cited reference, and as such Claims 2-11 which depend on independent Claim 1 are also in a condition for allowance as being dependent on an allowable

base claim. Further, Applicants respectfully submit that independent Claim 23, as amended, overcomes the cited reference, and as such Claims 24-33 which depend on independent Claim 23 are also in a condition for allowance as being dependent on an allowable base claim.

Independent Claims 12, 34, and 42

Regarding independent Claims 12, 34, and 42, embodiments of the claimed invention disclose methods of rendering images and systems for rendering the same. In particular, each of the methods and systems in the independent Claims 12, 34, and 42 generate a parametric texture map of a subject without modeling geometric configurations of the subject. As such, the arguments set forth with regards to independent Claims 1 and 23 illustrating that the Miller et al. reference taken alone or in combination teaches away from the present invention is equally applicable to independent Claims 12, 34, and 42.

Thus, Applicants respectfully submit that the Miller et al. reference in combination with the DeRose et al. reference do not show nor suggest the method of the present invention as recited in independent Claims 12, 34, and 42.

Accordingly, Applicants respectfully submit that Independent Claim 12 overcomes the Examiner's basis for rejection, and as such Claims 13-22 which depend on Independent Claim 12 are

also in a condition for allowance as being dependent on an allowable base claim. Also, Applicants respectfully submit that Independent Claim 34 overcomes the Examiner's basis for rejection, and as such Claims 35-41 which depend on Independent Claim 34 are also in a condition for allowance as being dependent on an allowable base claim. Additionally, Applicants respectfully submit that Independent Claim 42 overcomes the Examiner's basis for rejection, and as such Claims 43-49 which depend on Independent Claim 42 are also in a condition for allowance as being dependent on an allowable base claim

CONCLUSION

In light of the facts and arguments presented herein, Applicants respectfully request reconsideration of the rejected Claims.

Based on the arguments presented above, Applicants respectfully assert that Claims 1-49 overcome the rejections of record. Therefore, Applicants respectfully solicit allowance of these Claims.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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1/6/04



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